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ABSTRACT

The guide for hospital administrators, chiefs of services, and health personnel in general, suggests ways to evaluate the utilization of manpower and to restructure health manpower occupations. The need to evaluate utilization is outlined in terms of problems faced by health institutions. The experience of the Center for Medical Manpower Studies (CMMS) is described including its research findings on overlapping of medical functions, chronic employee shortages, high turnover, and lack of incentives. A section on analyzing the utilization of hospital personnel summarizes studies on hiring standards for paramedical manpower and restructuring paramedical occupations. A suggested methodology for individual hospitals to use in evaluating manpower utilization is presented. Detailed guidelines and instructions for conducting a survey of health personnel within a facility and criteria for judging the results are provided (including completed sample forms and instructions for summarizing data). Eight CMMS recommendations to The Cambridge Hospital for improving manpower utilization are listed with the action taken on them. Ten specific guidelines for restructuring of paramedical manpower are offered. Lists of CMMS publications and selected readings conclude the guide. (Author/MS)

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GUIDE TO RESTRUCTURING MEDICAL MANPOWER OCCUPATIONS IN HOSPITALS

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PREFACE

The authors have been involved in research and development projects in the health manpower field since 1967. Under the sponsorship of the Manpower Administration, the Center for Medical Manpower Studies was established in the Economics Department of Northeastern University in 1972, to act as a clearinghouse for health manpower studies, as well as to coordinate such research activities at Northeastern University. The Center is indebted to Dr. Howard Rosen, Director, Office of Research and Development, Manpower Administration, U. S. Department of Labor and to Mr. William Throckmorton of that office. Mr. Throckmorton has had the principal responsibility of guiding us in our research and development efforts in the health manpower area.

This brochure is written for hospital administrators, chiefs of services, and health personnel in general. Its purpose is to present a methodology for analyzing the utilization of health manpower, and for restructuring health manpower occupations. The experience of the Center for Medical Manpower Studies in the study of health manpower utilization and in the restructuring of occupations will also be described.

Further information and complimentary copies of completed studies and progress reports may be obtained by writing to:

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INTRODUCTION

In our first brochure entitled, *Research and Development in the Utilization of Medical Manpower,* we described the growth of health care services and analyzed several research and development studies involving the restructuring of health occupations with an aim toward improving the health care delivery system.

This brochure is a more detailed analysis of how to evaluate the utilization of manpower, and how to restructure health manpower occupations, if and when necessary.

I. The Need to Evaluate the Utilization of Health Manpower

As a hospital administrator, chief of service or nursing director, you are faced daily with an increasing multitude of problems associated with the running of a medical institution. It is very likely that you are seeking answers to critical questions related to the improvement of the utilization of the time and qualifications of physicians and other health personnel. You may also be affected by high turnover rates and an endless list of other problems. Each problem must be resolved or at least controlled. Within the hospital's demanding atmosphere, an administrator or chief of service may find little time to expend in a long-term effort which would cure the many persistent problems of a medical setting.

Problems faced by health care institutions

In many areas of the country there are shortages of skilled, professional workers in the allied health field. Many institutions are engaged in training and educating needed health professionals each year, but because of increased demand, marginal salaries—often significantly less than in the manufacturing sector—short leaves from the labor market, and shifts in occupations, temporary and prolonged vacancies continue for various occupations. High turnover, a costly item in the administration of personnel is fairly commonplace, often symptomatic of general job dissatisfaction. The source of this dissatisfaction may

vary with different people, but wages, boring or tedious work, duties that are below the professional capability of the employee, and lack of opportunities for advancement are frequently expressed root causes.

Job dissatisfaction

Hospitals across the nation are finding that some or many of their allied health employees are dissatisfied, to some degree, with their work or job.

What is the situation in your hospital?

Problem areas to be considered

Is the turnover rate high among your health employees?

Are your hiring-in standards higher than actually required to perform the job efficiently?

Are your medical personnel performing many unskilled and custodial functions?

Are there realistic opportunities for your employees to advance to higher rated and higher paid jobs?

Do you provide on-the-job training or offer training programs so that employees have the opportunities for upgrading?

No matter how you may respond to these questions at present, the problem will undoubtedly become more complex in the near future. Some form of a national health program is likely to become law within the next few years, requiring considerably more services from the health industry. The manpower needs of the industry are likely to rise substantially, perhaps well beyond the numbers capable of being trained by the present training institutions. It will be imperative that every health facility in the nation utilize its human resources as efficiently and effectively as possible.

Utilizing your manpower efficiently and to the complete satisfaction of all your employees (and, obviously, the patient) is exceedingly difficult to accomplish. First, however, it is important to have a good grasp of how effectively your health employees are currently being utilized. Only then can the necessary steps be taken to improve the utilization of manpower in your hospital. The difficulties of improving manpower utilization are many, and at the outset one must be firmly convinced that the need for improvement is there.

Good grasp of health personnel utilization essential

II. The Experience of the Center for Medical Manpower Studies

Since 1967, the Center for Medical Manpower Studies at Northeastern University has been involved in the analysis of the utilization of manpower in the health care industry and in the study of improving its efficiency, principally through the reordering of the occupational structure. During this eight-year period, the Center has been closely involved with approximately 35 hospitals located in the New England area. All these hospitals have utilized their health personnel with less than total regard for their professional experience and educational background. It has also been learned that with the concerted effort of the hospital administration and staff, significant and substantial changes can be instituted to improve the utilization of the hospital's personnel.

Throughout this research, many of the same symptoms have been apparent at each hospital studied. How does your hospital check out on this list?

Overlapping of medical functions

1. **Overlapping of Functions.** Physicians, registered nurses, licensed practical nurses and nurse's aides frequently perform the same functions. Such overlapping of services is costly to the hospital, both in money and in the waste of talent. It makes little sense to have a registered nurse spending large portions of the day performing tasks which could, with proper training, be handled by LPN's, aides or even by housekeeping staff. Conversely, the quality of patient care is reduced when staff perform certain duties for which they are not properly trained. The administrators of some hospitals were able to reorder their occupational structure so that trained personnel were utilized effectively and entry level personnel were offered training and opportunities for upgrading.

2. **Chronic Employee Shortages.** Do you find nursing positions difficult to fill? Are you in sharp

competition with every other institution in your area for a limited number of professionals? There is some indication that reported shortages of health personnel are self-perpetuating and are created by health care institutions. If employers would act to re.ain present employees, attract new employees and reexamine hiring standard policies, such shortages could well be eased.

Chronic health manpower shortages

3. **High Turnover and Lack of Incentives.** Are there persistent vacancies, particularly among entry level personnel, and an apparent lack of enthusiasm among the staff you do retain? Less obvious than overlapping functions or employee shortages, is the job dissatisfaction which results when entry level personnel realize that their jobs are dead-ended.

Lack of incentives in hospitals

Lack of opportunities for further training toward performing more interesting and meaningful tasks, as well as salary scale limits, contribute to widespread job dissatisfaction.

It should not be assumed, however, that everyone has a burning desire to climb some real or mythical occupational ladder. Many hospital employees interviewed had become conditioned to their occupational status by the present limits to upward mobility. This viewpoint suggests that attempts to establish career ladders will not succeed without concurrent efforts to provide motivation, education, and training, as well as appropriate salary scales. Since the present system has fostered these limited expectations for career advancement, it is ultimately the responsibility of policy makers within the system to offer alternative career options to their personnel.

III. Analysis of the Utilization of Hospital Personnel

Hiring Standards for Paramedical Manpower

In our pilot study in 1967, *Hiring Standards for Paramedical Manpower*, we investigated the hiring standards practiced by hospitals in the Boston area for a series of allied health occupations. These hiring standards were then compared with a list of functions performed by each occupation, to determine whether the standards were realistic in view of the requirements of the job. Our findings showed that the hiring standards for a number of occupations were higher than necessary, resulting in a contrived shortage and a workforce largely dissatisfied with underutilization of their training.

We followed up this study with an in-depth investigation of a single hospital and are currently continuing a similar type of analysis in five additional hospitals. We conducted detailed interviews with supervisors of various allied health occupations, eliciting from them a list of tasks and responsibilities of employees under their jurisdiction. We then interviewed at length several employees from each occupation to establish a complete and exact list of their duties and responsibilities.

After analyzing and cross-checking the end product from the two sets of interviews, we compared the results with lists of functions compiled in our pilot study, *Hiring Standards for Paramedical Manpower*. The functions outlined in that study were the result of detailed interviews with approximately 450 performers and 150 supervisors, specialists, administrators and physicians. To be certain that all those interviewed understood the terms, we defined each task in detail for quick reference.

All of the specific functions for each occupation were ranked in order of difficulty using as chief criteria the following: practical experience, educational exposure, and general responsibilities. A number of professional persons in each field aided the researchers and supervisors in this ranking.

Based on these listings of functions we developed performance questionnaires in the following areas:

1. **General Nursing Service**
   a. Registered Nurse
   b. Licensed Practical Nurse
   c. Nurse's Aide
   d. Orderly
   e. Nursing Assistant

2. **Psychiatry Department**
   a. Registered Nurse
   b. Psychiatric Attendant

3. **Operating Room**
   a. Registered Nurse
   b. Licensed Practical Nurse
   c. Surgical Technician
   d. Operating Room Orderly

4. **Clerical Duties**
   a. Ward Secretary
   b. Unit Clerk
   c. Unit Secretary
   d. Unit Aide

5. **Inhalation Therapy Department**
   a. Inhalation Technologist
   b. Inhalation Technician

6. **X-ray Department**
   a. X-ray Technologist
   b. X-ray Technician

7. **Laboratory**
   a. Hematology Technologist
   b. Hematology Technician
   c. Blood Bank Technologist
   d. Blood Bank Technician
   e. Bacteriology Technologist
   f. Bacteriology Technician
   g. Cytology Technologist
   h. Cytology Technician
   i. Histology Technologist
   j. Histology Technician
   k. Urinalysis and Parasitology Technologist
   l. Urinalysis and Parasitology Technician
   m. Chemistry Technologist
   n. Chemistry Technician

8. **EKG Technician**

9. **Patient Care**
   a. Senior Medical Staff
   b. Resident
   c. Intern
   d. Physician's Assistant
   e. Registered Nurse
   f. Nurse Practitioner

CMMS has developed questionnaires and job descriptions in these areas

For reference, the General Nursing Service questionnaire is included in Appendix A. All nine questionnaires are available from the Center to chiefs of services and administrators who feel these questionnaires may be useful. Each questionnaire encompasses as many related occupational categories as possible in order to determine the degree of overlap in the performance of specified functions.

An interviewer showed each performer the list of functions and asked if they represented 95 percent of the tasks performed during an average work week. We found performers adding only an insignificant number of tasks to the original lists. In addition, each performer was asked to indicate the percentage of weekly time spent on each function listed on the questionnaire.

To limit the possibility that some employees might exaggerate their area of authority or responsibility, a member of our research staff and a graduate registered nurse (who had never been employed at that hospital) observed 50 percent of the sample, for a period of four to five hours.

Restructuring Paramedical Occupations

In this phase of our study we gathered a massive amount of information which was then sorted into meaningful units and placed in tables. The tables in their entirety are contained in *Restructuring Paramedical Occupations*, Vol. II.[1] They indicate substantial duplication of responsibilities. Many of the simpler functions were performed by all levels of personnel with varying amounts of training or education.[2] In addition, the same duplication was demonstrated in the performance of the more complicated functions. Even near the bottom of the list, where

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1. Harold M. Goldstein and Morris A. Horowitz, *Restructuring Paramedical Occupations.* A Report to the Manpower Administration, U.S. Department of Labor, January, 1972.

2. For example, the function we ranked number one (the least complicated) – "cleaning and straightening patients' furniture' –was performed by 91.4 percent of the registered nurses, 100 percent of the LPN's, 96.3 percent of the nurse's aides and 100 percent of the orderlies. Function 11b, "taking a specimen to the lab", was performed by 60 percent of RN's, 77.8 percent of LPN's, 92.6 percent of aides and 100 percent of orderlies. Function 14a, "checking food trays", was done by 60 percent of the RN's, 77.8 percent of LPN's, 88.9 percent of NA's and 37.5 percent of orderlies.

duties are more complex, there was significant overlap.[3]

Medical personnel profile

Our research also inquired into the background of all persons in the sample in order to establish a profile of those in each occupation (See pages 26-28 Background Information). The questionnaire dealt with some personal characteristics, as well as the opinions and aspirations of those interviewed. The questionnaire revealed how workers viewed their positions and opportunities to advance, as well as future employment plans.

In this phase we found that 42.1 percent of RN's, 60 percent of LPN's, 29.6 percent of NA's and 12.5 percent of orderlies had received no orientation to their jobs. Those who did report receiving orientation almost unanimously agreed it was less than one week in duration. All personnel felt that some orientation was necessary and the bulk of those interviewed felt it should take the form of an informal introduction to the hospital, ward and general policies by a trainer, supervisor, head nurse or nurse.

Further, many of those interviewed suggested additional programs that would be helpful. The bulk of aides and orderlies (81.5 and 75 percent, respectively) desired a combination of formal classes and on-the-job training by a specific trainer. Twenty-two percent of the aides and 62.5 percent of the orderlies felt they should also be trained to perform more functions.

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3. Task 49b, "making necessary arrangements for X-rays and lab work," was done by 82.9 percent of the RN's, 88.9 percent of LPN's, 22.2 percent of aides and 37.5 percent of orderlies. Function 50, "supervision, preparation and maintenance of patient clinical records", was done by 82.9 percent of RN's, 88.9 percent of LPN's and 11.1 percent of aides. No orderlies reported performing this function.

We asked each category about the formal training they felt their job required, and 24.3 percent of the RN's felt that a two-year associate program was sufficient preparation, 45.9 percent preferred a three-year diploma program, 24.3 a four-year diploma program and 35.1 percent felt that the latter was necessary for teaching or administrative nursing. However, it is interesting to note that no more than one in eight felt that periodic refresher courses should be required of all RN's.

Half of the LPN's were satisfied with the current balance of formal classes and on-the-job training in most LPN schools, ten percent wanted more, and ten percent wanted fewer formal classes. About one-third felt that the program should be longer and more detailed.

After completing the organization and tabulation of all data and consulting with independent medical experts, we developed our recommendations. Submission of these recommendations was followed up with a detailed record of the significant events that occurred in the hospital, in an effort to obtain a rough estimate of the changes in quantity and quality of health care delivery.

IV. How to Evaluate Manpower Utilization

The evaluation of manpower utilization

We have indicated above, how the utilization of allied health personnel in a number of hospitals was analyzed, and we have presented a summary of our findings. In these hospitals, a consistent pattern of manpower utilization emerged, characterized by the following: considerable overlap of functions by related professions, little in-service training and little possibility of upgrading or promotion from within, and hiring standards placed at a level unnecessarily high for achieving effective performance of the job.

If you believe that the manpower utilization in your hospital is similar to what we found in our surveys, then there may be no need for you to conduct such a study. However, you may be interested in reviewing the material that follows in this brochure to learn how utilization of allied health personnel in the sample hospitals was improved, and how similar results may be achieved in your institution. Restructuring occupations was the principal goal, but the hospitals succeeded in making other significant changes, many of which could readily be introduced in other hospitals.

Suggested methodology for individual hospitals

On the other hand, if you need convincing that the utilization of manpower in your hospital can be improved, conduct a survey of utilization as we have done in a number of hospitals. The following are the major steps to take:

1. Select one or more departments for investigation. Depending on the size and type of hospital, you may analyze only one department, such as general nursing service, or you may include others, such as the X-ray department and the laboratory. Assign someone from your staff as project director, with prime responsibility for all aspects of the research.

2. Explain, in detail, to all personnel and to any unions in the department involved, the

purpose of the investigation. In order to gain the cooperation of all personnel, assurances must be given that no employees will be disadvantaged by the study.

3. Using the appropriate list of functions and the appropriate questionnaire[4], interview a sample of employees in the department. In order to assure the employees of a measure of confidentiality, it is preferable that the interviewer be someone from outside the hospital, or a non-supervisor from some other department.

4. Analyze the responses. Determine whether the hiring-in qualifications are needed to perform the functions on which the employees spend a major share of their time. Determine whether there is substantial overlap of functions being performed by persons in different occupations. Determine whether a significant portion of the functions performed by persons in a specific occupation is below the level normally expected of that occupation.

5. Decide whether or not the personnel are being utilized efficiently. If you are satisfied with the manpower utilization in your hospital, you can be pleased with this rather unique situation. If you are not completely satisfied with the utilization, the following suggests what steps may be taken to improve the situation.

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4. To obtain complete lists of functions and appropriate questionnaires, write to: Center for Medical Manpower Studies, Northeastern University 301 UR, 360 Huntington Avenue, Boston, MA 02115.

V. Restructuring Techniques and A Sample Interview

The following describes the methodology used to arrive at the Center's conclusions on the current utilization of health manpower in hospitals. We have included guidelines and instructions to conduct a survey of health personnel in your own facility as well as the criteria to judge the results of this survey in line with the results of our research endeavors.

If a hospital administrator or department head wishes to conduct such a survey, the following steps detail how to use the questionnaire, tabulate and interpret the results, as well as to pinpoint where the utilization of health workers could be improved. Part IV of this brochure outlined a general approach to this kind of restructuring.

Once the field work is accomplished, the committee should choose a research assistant to conduct the interviews and this interviewer should become familiar with its format and task definitions, which are explained in Volume II of the RPO Study.

For any of the hospital administrators who want to confirm the existence of overlap among those who perform functions in their own institutions, the following guidelines may help in the procedure.

The interviewer conducts the session, asks all the questions aloud and records the responses. The performer does not complete any part of the questionnaire, so that he or she may focus entirely on the questions.

Interviewer predictions

The purpose of this undertaking should be carefully explained to all those who work in the department. In addition, the interviewer should assure each respondent that the information contained in these interviews is confidential, and that no names will be associated with individual responses.

Beginning the interview session with the background questions (see sample interview pp. 26-28) allows an opportunity for the performer to relax and become familiar with the interview process. From our experience, it is better to conduct the interview in one session, lasting on the average between 20 to 30 minutes in order to assure continuity of the responses. The setting for this interview should be away from the immediate work situation to prevent any distractions.

The second part of the interview, the functions questionnaire, is based on the amount of time spent on a series of functions. The method used to arrive at these tasks has already been described in Part III. We are confident that they represent a comprehensive inventory of general nursing functions. To test their comprehensiveness, it has been our practice to ask each performer, if, after completing the questionnaire, there are any additional tasks that are not included. The individual is asked whether he or she performs a given function. The performer is also asked what percentage of the work week is spent on each function (1-69).

The following table (Table I) is the guideline we have given to performers to help them portion out their time on a percentage basis.

Aids for performers to distribute their time

TABLE I

Time Spent/Week (40 Hours)	Percent
Under 30 minutes	Less than 1
30 minutes–2 hours	1 – 5
2 hours–4 hours	6 – 10
4 hours–6 hours	11 – 15
6 hours–10 hours	16 – 25
Over 10 hours	Greater than 25

If possible it is preferable to ask for specific percentages according to the following breakdown:

TABLE II

1 hr	= 2% or about 10 minutes a day
3 hrs	= 8% or about 30 minutes a day
5 hrs	= 13% or about 1 hr a day
8 hrs	= 20% or about 1½ hrs a day
10 hrs	= 25% or about 2 hrs a day

Some individuals find it easier to think about a typical work day, rather than a work week, so that Table II will give an interviewer alternative ways to manage the time aspect. We have found that the absolute number assigned to each function is not as important as the proportion of the total work week assigned to each function.

It is helpful to assure each responder t that the time need not equal exactly 100%. From our experience, we have found that there is no distortion in how an individual has apportioned the time, only in the number assigned to it. We have included an example of a typical interview (see pp. 16-21) (an RN, S. Jones) where the original total time spent on all functions equaled 255%. As the form indicates, by multiplying each response by .4, (derived by dividing 100 by 255) the total is then reapportioned to equal 100% without changing the weight given to any one function with respect to another.

To allow for those who wish to follow through and construct a summary table to compare with our tables, we have enclosed instructions and a sample. (See pp. 22-25).

Sample of completed General Nursing Service questionnaire

I. Name: Susan Jones

II. Job Title: Registered Nurse

INTERVIEW #1

III. Department: GENERAL NURSING SERVICE

Which of the following functions are you presently performing?	Yes or No	Not Done this Department	Percentage of Time Spent on Each Function	Reducing Factor 100 ÷ 255	Adjusted Percentage of Time Spent on Each Function
1. Straightening up and cleaning: patients' immediate furniture, nurses station, utility rooms, treatment rooms, nourishment center and litters.	yes		13	.4	5.1
2. Distributing mail and flowers.	no		–	.4	0
3. Doing department errands: going to orthopedic department, Central Supply, laundry, IBM or records office, or operating room to help bring back a patient.	yes		8	.4	3.1
4. Doing errands for patient: making phone calls, refilling water jugs, preparing snacks or drinks from nourishment station, getting an extra pillow.	yes		25	.4	9.8
5. Giving and removing bedpans, assisting patient to use bedpan or urinal, helping patient to and from bathroom.	yes		8	.4	3.1
6. Making beds: unoccupied, occupied, post-operative.	yes		5	.4	2.0

7. Answering patient calls.	yes		5	.4	2.0
8. Admitting patient: completing clothes list or valuables list, getting patient settled in bed, notifying intern.	yes		3	.4	1.2
9. Discharging patient: returning clothes and valuables, accompanying patient from floor.	yes		3	.4	1.2
10. Locating and setting up simple equipment: bed rails, footboards, sandbags, heel coverlets.	yes		8	.4	3.1
11. Taking patient to X-ray; taking lab specimens to lab.	yes		8	.4	3.1
12. Assisting in moving patient to another floor.	yes		(1	.4	.4
13. Measuring food and fluid intake and output and totaling: urine jugs, tube drainage and IV intake, at the end of each shift.	yes		8	.4	3.1
14. Checking, delivering and picking up food trays; feeding patients.	yes		8	.4	3.1
15. Putting away supplies, instruments and equipment.	yes		1	.4	.4
16. Washing or soaking used equipment and supplies, putting them on the cart to be returned to Central Supply.	yes		1	.4	.4
17. Caring for deceased persons.	yes		1	.4	.4
18. Giving information or directions to patients or visitors, or directing them to the correct source of information.	yes		3	.4	1.2

Which of the following functions are you presently performing?	Yes or No	Not Done this Department	Percentage of Time Spent on Each Function	Reducing Factor 100 ÷ 255	Adjusted Percentage of Time Spent on Each Function
19. Collecting urine, stool, or sputum specimens to be sent to lab; performing routine tests; obtaining a culture.	yes		8	.4	3.1
20. Giving routine morning care.	yes		21	.4	8.2
21. Preparing patients for bed at night.	yes		8	.4	3.1
22. Assisting patients with walkers, wheelchairs, crutches and braces.	yes		3	.4	1.2
23. Lifting patients on and off litters.	yes		(1	.4	.4
24. Taking and recording: temperature, pulse, respiration rate, blood pressure and weight.	yes		8	.4	3.1
25. Assisting patient with Sitz bath.	yes		(1	.4	.4
26. Applying or changing: ice bags, hot water bottles, ace bandages, elastic stockings, binders, slings, restraints.	yes		8	.4	3.1
27. Giving cleansing treatments: enemas, douches.	yes		3	.4	1.2
28. Caring for wounds: dressing, irrigating, changing dressings.	yes		13	.4	5.1
29. Feeding patient by tube.	yes		3	.4	1.2
30. Caring for precaution or reverse precaution patients.	yes		1	.4	.4

31. Setting up suture sets, assisting doctor in removing sutures.	yes	Removes sutures herself.	(1	.4	.4
32. Doing cervical smears; veneral disease smears.	no		0	.4	0
33. Assisting doctor in wart removal; skin biopsies.	yes		1	.4	.4
34. Washing and dressing lacerations.			0	.4	0
35. Using EKG equipment.	yes		(1	.4	.4
36. Drawing blood.			(1	.4	.4
37. Ordering drugs from pharmacy; receiving and putting away drugs.	yes		(1	.4	.4
38. Administering specified medication; noting time and amounts on patients' charts.	yes		15	.4	5.9
39. Performing functions related to oxygen masks and catheters.	yes		1	.4	.4
40. Performing functions relating to IV's.	yes		3	.4	1.2
41. Assisting physicians during treatment and examination of patients.	yes		3	.4	1.2
42. Counting narcotics and berbiturates at the change of each shift.	yes		1	.4	.4
43. Observing and reporting to supervisor or physician on patient's conditions, reaction to drugs, treatments, IV's, significant incidents.	yes		3	.4	1.2

Which of the following functions are you presently performing?	Yes or No	Not Done this Department	Percentage of Time Spent on Each Function	Reducing Factor 100 ÷ 255	Adjusted Percentage of Time Spent on Each Function
44. Serving emotional support to patients; entertaining patients (particularly children).	yes		3	.4	1.2
45. Participating in cardiac arrest team.	yes		1	.4	.4
46. Beginning preparations for patient scheduled for surgery.	yes		2	.4	.8
47. Filling out accident reports.	yes		1	.4	.4
48. Stamping lab slips and requisitions, making necessary arrangements for X-rays and lab work.	yes		3	.4	1.2
49. Checking and posting orders in MD order books.	yes		3	.4	1.2
50. Checking off diet manual each shift.	yes		1	.4	.4
51. Recommending or arranging for a consultation with medical specialists, social services, psychiatry, etc.	yes		1	.4	.4
52. Assigning and coordinating nursing activities, including making out daily assignment sheet.	yes		3	.4	1.2
53. Evaluating quality of nursing care.	yes		1	.4	.4
54. Observing nursing care and visiting patients regularly to ensure proper nursing care.	yes		1	.4	.4

WORKSHEET

C-2

	Interview 1	Interview 2	Interview 3	Interview 4	Total % of Time Spent by 1-2-3-4-	Column A X 2400
					A	B
48						
49						
50						
51						
52						
53						
54						
55						
56						
57						
58						
59						
60						
61						
62						
63						
					Group 4 Total Minutes •	
64						
65						
66						
67						
68						
69						
					Group 5 Total Minutes •	

Totals by Group	Column B	% by Group
Group 1		
Group 2		
Group 3		
Group 4		
Group 5		

C–1 WORKSHEET

	Interview 1	Interview 2	Interview 3	Interview 4	Total % of Time Spent by 1-2-3-4-		Column A X 2400
					A		B
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
					Group 1 Total Minutes →		
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
					Group 2 Total Minutes →		
31							
32							
33							
34							
35							
36							

4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							

Group 1 Total Minutes →

19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							

Group 2 Total Minutes →

31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							
45							
46							
47							

Group 3 Total Minutes →

50							
51							
52							
53							
54							
55							
56							
57							
58							
59							
60							
61							
62							
63							

Group 4 Total Minutes →

64							
65							
66							
67							
68							
69							

Group 5 Total Minutes →

Totals by Group	Column B	% by Group
Group 1		
Group 2		
Group 3		
Group 4		
Group 5		
Grand Total =		

55. Regularly inspecting rooms and wards for cleanliness and comfort.	yes		1	.4	.4
56. Accompanying physicians on rounds.	yes		3	.4	1.2
57. Investigating and adjusting complaints.	yes		1	.4	.4
58. Supervising preparation and maintenance of patients' clinical records.	no		1	.4	.4
59. Giving change-of-shift report.	yes		5	.4	2.0
60. Teaching.	yes		3	.4	1.2
61. Research.		✓			
62. Supervisory duties.	yes		1	.4	.4
63. Waiting for work.	no				
64. Caring for a mother in labor.		✓			
65. Assisting in delivery room.		✓			
66. Caring for newborn.		✓			
67. Caring for mother after delivery.		✓			
68. Preparing babies or children for afternoon naps, including, bathing, diapering, giving bottle if applicable.		✓			

Total % of time spent on all functions = 255%

Reducing Factor Total to 100% = 100 ÷ 255 = .4

SUMMARY TABLE

How to construct a Summary Table

The following procedure was used to arrive at the Summary Table for each occupation:

1. Evaluate each questionnaire and reduce the percentage of time spent on each function proportionately so that the total equals 100%. To accomplish this—following the instructions on the questionnaire—total the percentage of time spent on all functions and divide 100 by this total. The result is a reducing factor which will decrease the given percents to actual percentage, totalling 100%.

   It is assumed that there is no distortion in the relative importance of each function, only in the number assigned to it.

2. Using the worksheet provided, (See Centerfold) transfer the actual percentage of time spent on each function for all interviewed in an occupation (we have entered Susan Jones' interview results in the column headed Interview I on the sample pg. 24.)

3. Add across the row for the percent of time spent by individuals 1, 2, 3, & 4 on each function and enter totals in column A.

4. Multiply each entry in column A by 2400 (minutes in an average work week) and enter in column B to get the total minutes spent on each function by those who perform it.

5. Add the total minutes spent on each group of functions in column B and enter these group totals in the box provided on page C-2 of the centerfold worksheet.

6. The percentage of time spent on each group is calculated by dividing each group total by the grand total and entering it in the column labeled "Percentage By Group".

7. These percentage figures are the Summary Table breakdown for each occupation. [See General Nursing Summary, page 23, to enter results for each occupation].

GENERAL NURSING SUMMARY

Average Percent of Time Spent on Five Groups of Functions by Registered Nurses, Licensed Practical Nurses, Nurse's Aides as Found in Five-Hospital Study, 1972-1975.

General Nursing Summary Table

OUR RESULTS

Groups of Functions Ranked From Easiest to Most Difficult	RN	LPN	NA
General Nursing			
Group 1 (1-18)	27.5	29.6	53.2
Group 2 (19-30)	23.7	30.1	28.8
Group 3 (31-47)	26.2	19.4	12.0
Group 4 (48-63)	19.4	12.7	3.9
Group 5 (64-69)	3.2	8.1	2.0

YOUR HOSPITAL

	RN	LPN	NA
General Nursing			
Group 1 (1-18)			
Group 2 (19-30)			
Group 3 (31-47)			
Group 4 (48-63)			
Group 5 (64-69)			

WORKSHEET – SAMPLE

Worksheet sample

	Interview 1	Interview 2	Interview 3	Interview 4	Total % of Time Spent by 1-2-3-4-	Column A X 2400
					A	B
1	5.1	1.1	6.2	1.4	13.8	33120
2	0	0	.3	0	.3	720
3	3.1	0	0	.5	3.6	8640
4	9.8	1.1	.3	.5	11.7	28080
5	3.1	8.0	7.4	3.8	22.3	53520
6	2.0	8.0	6.2	1.4	17.6	42480
7	2.0	8.0	.9	3.8	14.7	35280
8	1.2	3.0	6.2	1.4	11.8	28320
9	1.2	1.1	2.4	.5	5.2	12480
10	3.1	4.9	.3	.5	8.8	21120
11	3.1	0	0	0	3.1	7440
12	.4	.4	.9	.5	2.2	5280
13	3.1	4.9	.3	1.4	9.7	23280
14	3.1	4.9	7.4	3.8	19.2	46080
15	.4	0	.9	.5	1.8	4320
16	.4	0	0	0	.4	960
17	.4	.4	.3	.5	1.6	3840
18	1.2	1.1	.3	.5	3.1	7440
				Group 1 Total Minutes	-	362400
19	3.1	1.1	.9	.5	5.6	13440
20	8.2	9.8	7.4	12.0	37.4	98760
21	3.1	.4	7.4	.5	11.4	27360
22	1.2	3.0	0	1.4	5.6	13440
23	.4	1.1	.9	.5	2.9	6960
24	3.1	4.9	.9	1.4	10.3	24720
25	.4	.4	.3	.5	1.6	3840
26	3.1	3.0	.9	1.4	8.4	20160
27	1.2	1.1	.9	.5	3.7	8880
28	5.1	3.0	.9	1.4	10.4	24960
29	1.2	.4	2.4	.5	4.5	10800
30	.4	.4	.3	1.4	2.5	6000
				Group 2 Total Minutes	-	259320
31	.4	0	.3	.5	1.2	2880
32	0	0	0	.5	.5	1200
33	.4	0	.3	0	.7	1680
34	0	0	.3	.5	.8	1920
35	.4	0	0	0	.4	960
36	.4	0	0	0	.4	960
37	.4	0	.9	.5	1.8	4320
38	5.9	1.1	7.4	12.0	26.4	63360
39	.4	1.1	.9	1.4	3.8	9120
40	–	–	–	–	–	–
41	1.2	3.0	2.4	3.8	10.4	24960
42	1.2	1.1	2.4	1.4	6.1	14640
43	.4	.4	.9	.5	2.2	5280
44	1.2	1.9	.9	1.4	5.4	12960
45	1.2	3.0	2.4	1.4	8.0	19200
46	.4	0	.9	0	1.3	3120
47	.8	3.0	.3	.5	4.6	11040
				Group 3 Total Minutes	-	177600

WORKSHEET – SAMPLE

	Interview 1	Interview 2	Interview 3	Interview 4	Total % of Time Spent by 1-2-3-4	Column A X 2400
					A	B
48	.4	.4	.9	.5	2.2	5280
49	1.2	.4	.3	1.4	3.3	7920
50	1.2	.4	2.4	1.4	5.4	12960
51	.4	.4	.9	.5	2.2	5280
52	.4	0	.9	.5	1.8	4320
53	1.2	0	.9	.5	2.6	6240
54	.4	0	0	1.4	1.8	4320
55	.4	1.1	2.4	3.8	7.7	18420
56	.4	0	.3	.5	1.2	2880
57	1.2	.4	2.4	0	4.0	9600
58	.4	1.1	.9	.5	2.9	6960
59	.4	1.1	0	0	1.5	3600
60	2.0	1.1	.9	1.4	5.4	12960
61	1.2	1.1	2.4	3.8	8.5	20400
62	0	0	0	0	0	0
63	.4	0	0	10.1	10.5	25200
					Group 4 Total Minutes =	142500
64	0	.4	0	1.4	1.8	4320
65	0	0	0	0	0	0
66	0	0	0	0	0	0
67	0	0	0	0	0	0
68	0	0	0	0	0	0
69	0	0	0	0	0	0
					Group 5 Total Minutes =	4320

Totals by Group	Column B	% by Group
Group 1	362400	38.3
Group 2	259320	27.4
Group 3	177600	18.8
Group 4	142500	15.1
Group 5	4320	.4
Grand Total =	946140	100.0

BACKGROUND INFORMATION

Sample of completed background information form

1. Name: Susan Jones
2. Job Title: Registered Nurse
3. Age: 36 4. Sex: F
5. Education:

	No. of Years	Name of School or Hospital	Degree Completed
Grammar School	8		
High School	4		yes
College	1	U. of Mass.	no

6. Additional Professional Training (explain): 3-year diploma school
7. On-the-Job Training (explain): Yes. 1 day-course on EKG machine operation after working here for several years. Would like more.
8. Professional Certification (specify): R.N.
9. Are you a student at present? No

Name of Program	Institution
–	–
Date Started	**Completion Date**
–	–

10. Do you receive a stipend or other form of financial support? No
11. Do you pay tuition? (specify) No
12. How long have you been employed at your present profession? 14 years
    a. At this hospital? 12 years

b. Elsewhere? (specify) 1 year, City Hospital & 1 year, Metropolitan State Hosp.

c. If elsewhere, how or why did you come to _____ Hospital? More benefits, better pay, closer to home

13. Have you been employed at any other health-related occupation? No

Specify: _____

When: _____

Where: _____

How long: _____

14. Exactly how detailed was your orientation after accepting your present job? Not detailed at all

a. Length of orientation: 1 day

b. Class work involved: 1 hr. orientation to hospital policies

c. Other: Head nurse explained duties on the floor

15. Exactly how would you train or orient a new employee in your field?

a. On-the-Job: 2-week on-the-job program

b. Classes in hospital: At least 1 hr. a day along with on-the-job training.

c. Other: It is important to become familiar with other departments, know where to find answers to questions.

16. What formal level of education should be required in your field? 3-year diploma school is sufficient for the R.N.'s job as it is here.

17. What personal qualities should be required in your department or field? Patience, stamina, professional attitudes toward patients and their problems.

18. What occupational level can you realistically hope to attain with your present educational and professional training? (Explain fully)

Up some existing occupational ladder? Dead-end? If dead-end, why?) Here, can't advance without a B. S. Degree.

19. To what extent did exposure to the following prepare you for the function you are presently performing?

	Percent
High School	–
College	25%
Vocational/Technical Training	–
On-the-Job Training	–
Professional Training	50%
Practical Experiences	25%
Other	–

20. Do you expect to remain at this Hospital? Why or why not?
Yes, this is a good environment, a progressive teaching hospital.

21. General Comments: She feels frustrated, can't go further here– would like to do more sophisticated tasks than she is allowed.

VI. CMMS Recommendations on Improving the Utilization of Health Manpower

CMMS recommendations to The Cambridge Hospital

Not all hospitals in which we studied the utilization of health personnel had identical problems; therefore our recommendations varied. Furthermore, the ease with which our recommendations were accepted, and the time in which changes were instituted also varied significantly. We readily accept that some changes are difficult to make, but we note that even the difficult changes can be made. The following indicate some of the issues on which we made recommendations, and the disposition of the recommendations.

1. The personnel structure at one hospital was informal and haphazard, and the hospital had no personnel director. When a supervisor, physician, director of nursing, or the administrator had a need for a new employee or replacement, each acted as a personnel director, with no centralized control or record keeping. We recommended that a permanent personnel office be established at the hospital, with a personnel director at its head responsible directly to the hospital administrator. This recommendation was accepted and instituted.

2. Lines of authority in the hospital were vague, and were not well known or publicized. No formal organizational chart, indicating lines of authority and responsibility existed. We recommended such an organizational chart, and it was accomplished.

3. Various categories of allied health personnel were underutilized and misallocated. The most frequently cited reasons for this were tradition and the unwillingness of supervisory personnel to allocate more sensitive and responsible functions to persons they considered lesser trained or untrained. In

some instances, this reluctance on the part of supervisory personnel appeared to be justified. On the other hand, our study showed that responsible and sensitive functions were already being performed by nurse's aides, orderlies, inhalation therapy technicians, surgical technicians, psychiatric attendants and corpsmen—types at the hospital. We recommended some reshuffling of job functions within the nursing hierarchy, and some restructuring was accomplished. In-service training programs were established to train and upgrade entry-level personnel. On-going in-service programs were established for aides, nursing assistants, X-ray technicians, RN's, LPN's, and several other categories of health workers.

4. During our interviews RN's indicated that they performed all of the 18 least difficult functions listed and this was substantiated by our observations. We strongly recommended that RN's be eased out of this group of functions whenever and wherever possible. The Nursing Department made a concerted effort to follow this recommendation, assigning these "simple" functions to health workers with less formal training and educational background. It was then possible to reduce the total number of nurses by approximately 5% with no increase in the number of aides.

5. In order to motivate personnel to undertake and complete training programs, some monetary incentive must be offered. We suggested that an increase in salary be given to those persons who complete the OJT programs for nursing assistants and medical assistants. Although hospital officials agree wholeheartedly that personnel who successfully complete training programs should receive

increases in salary, this was difficult to achieve in a municipal setting.

6. We recommended that the OJT programs be well publicized throughout the hospital and that qualified personnel be encouraged but not pressured to enroll. In this effort, the cooperation of any hospital union is essential. The union now in existence at The Cambridge Hospital did support the recommendations of the *RPO* study.

7. We recommended that the formats used in this study be used as a basis for a detailed job description of each of the eleven allied health occupations. The hospital administration has utilized the job descriptions developed in the *RPO* study in its new personnel department.

8. We recommended in-service training programs for radiologic technicians, registered nurses and inhalation therapy technicians. Radiologic technicians and inhalation therapy technicians now attend periodic conferences in order to receive instruction in the use of new techniques and equipment. All RN's at the hospital are now capable of operating EKG equipment. The hospital laboratory has grown from a staff of 27 in 1970 to 45 in September 1973. The laboratory now serves:

   a) Harvard Community Health Plan (12,000 families)
   b) Youville Hospital (305 beds)
   c) Cambridge Infirmary (160 beds)
   d) Stillman Infirmary, Harvard University (25,000 families)

There is overwhelming evidence that changes can be made, once the weaknesses are recognized and a determined and concerted effort is made to correct

them. Whether hospital administrators conduct their own surveys to determine the utilization of allied health manpower in their institutions or whether they adopt our findings as indicative of their own institution's problems, the ultimate goal will be to improve the hospital's manpower utilization and to restructure some of the allied health occupations.

VII. Guidelines in the Restructuring of Paramedical Manpower

Guidelines for restructuring

There is no surefire set of steps that will guarantee success in any effort to restructure the allied health occupations of a hospital. Nevertheless, the following are offered as important guidelines:

1. At the outset and throughout the program, it is imperative that the administrator be thoroughly convinced of the importance of the effort. Support for the program must be demonstrated enthusiastically and must be reinforced constantly. Some changes will not come easily or will come very slowly, and unless the administrator is completely convinced of the value of the changes, efforts may waiver and may ultimately fail.

2. The next step should be the formation of a committee on restructuring. This committee should include the director of nursing, heads of departments to be affected, as well as representatives from all segments of the hospital community. This will facilitate communications and help increase the cooperation of all concerned. This committee should be charged with the major task of analyzing the job functions of all health care occupations and of recommending all changes needed to improve the utilization of manpower.

3. The committee must then adopt a job description and a list of important functions for each major health care occupation. To assist in this effort, a series of detailed job descriptions has been compiled by CMMS and is available upon request. The General Nursing Service questionnaire (see pp. 16-21) is included as an example. For all practical purposes, this questionnaire is the job description.

4. Where there is significant or substantial overlap of functions, the committee should recommend a shifting of functions so that the more sophisticated functions will be performed by the higher-rated occupations, and the less sophisticated or simpler tasks will be performed by the lower-rated occupations. This should improve the utilization of manpower and also improve the quality of service in the hospital. Great care must be taken in introducing changes in this sensitive area, and employees affected must be given assurances that their earnings and job security will not be affected negatively.

5. In addition to examining job functions for each occupation, the restructuring committee should take a long look at the current hiring-in requirements. For example, is it necessary for aides or ward clerks to have high school diplomas? Are the hiring standards arbitrarily screening out entry level personnel from among disadvantaged and minority groups? If so, your hospital may be eliminating a ready pool of potentially stable employees, who are residents in your own community. Where a labor shortage exists, in-service programs could be provided to bring entry level personnel up to desired competence levels in basic skills.

6. If your attrition rate is high, it may be because of lack of in-service training and opportunities for upward mobility of employees. An important next step is to establish an in-service education department either to set up training programs within the hospital or to hire specialists to conduct classroom education and supervise on-the-job training. Although in-service educational programs are costly to the hospital, our findings indicate that in the long run, they more than pay for themselves in the form of

reduced attrition and increased job satisfaction.

7. Programs that permit or encourage upward mobility offer tremendous job satisfaction to the employees involved, as well as the opportunity for job advancement and higher earnings. One such in-service training program involves a progression of advancements from nursing assistant trainee to senior nursing assistant to nursing technician to senior nursing technician. The training course for nursing assistant is offered to those with no previous training when there is a sufficient number of interested applicants. The course is brief and is divided equally between supervised work and didactic training. Advancement to the next higher occupation is usually based on evidence of proficiency as observed by the individual's supervisor. In some states, if a nurse technician desires, he or she can elect to take a state board LPN exam and become an LPN by waiver. In one hospital, a successful program of career ladders allows entry level personnel to move up through the ranks in several areas, including nursing, clerical or laboratory. The program allows LPN's to receive registered nursing degrees through a two-year program which accepts their previous nursing experience toward those degrees.

8. Because of relatively rapid changes in technology, equipment and hospital policy, it is important to offer all health personnel continuing in-service education programs. All personnel should be encouraged to register for such courses.

While such training programs may not be feasible in your hospital, there are other ways of encouraging further training and advancement of your more highly trained staff. Reimbursement of tuition and

book costs, rescheduling of shifts to permit classroom attendance, and paid sabbaticals for further schooling are other options which may be pursued.

9. An important adjunct to job restructuring, in-service training and upward job mobility is compensation appropriate to the duties of the job. New titles and new responsibilities are important to job satisfaction, but a salary adjustment is generally critical if there is to be long-term interest in the position. There should be distinct differentials in salaries between steps on the job ladder. In general, our experiences indicate that the increases in compensation will be offset by the improvement in manpower utilization, the increase in job satisfaction and the decline in absenteeism, tardiness and turnover.

10. Above all, maintain a flexible outlook and an open mind relative to ideas and suggestions made by personnel at all levels. Some of the most creative innovations have been introduced in this manner.

The necessity for successfully communicating the benefits of the program to the total hospital community cannot be overemphasized. If a group of individuals within the hospital is not sufficiently convinced of the merits of the programs, or if a group is inadvertently excluded from receiving an adequate explanation of the proposed restructuring, the chances for success of the program are jeopardized. In short, the administrator must use whatever resources are available to assure all personnel, trustees, and unions within the facility that an effective restructuring will benefit the total institution and improve the quality of care. While most individuals and groups will gain, none will lose.

SUMMARY

In this brochure, we have demonstrated that it would be advantageous for a hospital to institute career ladder and in-service training. Our research findings have concluded that the present lack of vertical mobility is inefficient and wasteful in the use of health manpower. To what degree the overlapping of functions should be tolerated varies with the needs of individual facilities. Overall, in the face of rising costs and increased demand, the health care delivery system will be forced to adapt. There is no one set of standards to determine an unacceptable degree of overlap. The committee representing each department must determine which direction the facility will take. Here, the initial goals of the committee should be reexamined in the light of the findings of the survey. Does the outcome of the survey single out any areas that are ripe for restructuring? Where can employees and patients benefit from a reassigning of particular tasks? Are hiring standards for any particular occupation higher or lower than necessary to perform the job?

It would be ludicrous to suggest that health employees, physicians, registered nurses or any other of the many health occupations are expected to perform only the most sophisticated functions which they were trained to perform. For example, registered nurses cannot be expected to perform at their most sophisticated level forty hours a week, fifty weeks a year. This is obviously true for any occupation. However, in light of rising health costs and the increasing demand for health services, it is difficult to justify the opposite extreme.

If after using our suggested procedures, a hospital finds that one hundred percent of their registered nurses are spending 30% of their time on Group 1 functions (the simplest functions), and aides are spending an equal percentage of their time on Group 3 functions, something is clearly wrong. The situation is even worse if the hospital in question knows full well that personnel in the aide category have not received proper in-service education or on-the-job training programs qualifying them for the more sophisticated functions.

The hospital committee should examine closely those health occupations which experience high turnover rates and persistent vacancies. It is in these occupations that the hospital may receive a fairly quick payoff in lower turnover rates and increased job satisfaction by instituting realistic job ladders, in-service training, and job restructuring.

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